

VI. SUMMARY OF FEDERAL STATUTES AND REGULATIONS

This section discusses the Federal statutes and regulations that may apply to this sector. The purpose of this section is to highlight, and briefly describe the applicable Federal requirements, and to provide citations for more detailed information. The three following sections are included.

- Section IV.A contains a general overview of major statutes
- Section IV.B contains a list of regulations specific to this industry
- Section IV.C contains a list of pending and proposed regulations

The descriptions within Section IV are intended solely for general information. Depending upon the nature or scope of the activities at a particular facility, these summaries may or may not necessarily describe all applicable environmental requirements. Moreover, they do not constitute formal interpretations or clarifications of the statutes and regulations. For further information, readers should consult the Code of Federal Regulations and other state or local regulatory agencies. EPA Hotline contacts are also provided for each major statute.

VI.A. General Description of Major Statutes

Resource Conservation And Recovery Act

The Resource Conservation And Recovery Act (RCRA) of 1976 which amended the Solid Waste Disposal Act, addresses solid (Subtitle D) and hazardous (Subtitle C) waste management activities. The Hazardous and Solid Waste Amendments (HSWA) of 1984 strengthened RCRA's waste management provisions and added Subtitle I, which governs underground storage tanks (USTs).

Regulations promulgated pursuant to Subtitle C of RCRA (40 CFR Parts 260-299) establish a "cradle-to-grave" system governing hazardous waste from the point of generation to disposal. RCRA hazardous wastes include the specific materials listed in the regulations (commercial chemical products, designated with the code "P" or "U"; hazardous wastes from specific industries/sources, designated with the code "K"; or hazardous wastes from non-specific sources,

designated with the code "F") or materials which exhibit a hazardous waste characteristic (ignitability, corrosivity, reactivity, or toxicity and designated with the code "D").

Regulated entities that generate hazardous waste are subject to waste accumulation, manifesting, and recordkeeping standards. Facilities that treat, store, or dispose of hazardous waste must obtain a permit, either from EPA or from a State agency which EPA has authorized to implement the permitting program. Subtitle C permits contain general facility standards such as contingency plans, emergency procedures, recordkeeping and reporting requirements, financial assurance mechanisms, and unit-specific standards. RCRA also contains provisions (40 CFR Part 264 Subpart S and §264.10) for conducting corrective actions which govern the cleanup of releases of hazardous waste or constituents from solid waste management units at RCRA-regulated facilities.

Although RCRA is a Federal statute, many States implement the RCRA program. Currently, EPA has delegated its authority to implement various provisions of RCRA to 46 of the 50 States.

Most RCRA requirements are not industry specific but apply to any company that transports, treats, stores, or disposes of hazardous waste. Here are some important RCRA regulatory requirements:

- **Identification of Solid and Hazardous Wastes** (40 CFR Part 261) lays out the procedure every generator should follow to determine whether the material created is considered a hazardous waste, solid waste, or is exempted from regulation.
- **Standards for Generators of Hazardous Waste** (40 CFR Part 262) establishes the responsibilities of hazardous waste generators including obtaining an ID number, preparing a manifest, ensuring proper packaging and labeling, meeting standards for waste accumulation units, and recordkeeping and reporting requirements. Generators can accumulate hazardous waste for up to 90 days (or 180 days depending on the amount of waste generated) without obtaining a permit.
- **Land Disposal Restrictions** (LDRs) are regulations prohibiting the disposal of hazardous waste on land without prior treatment. Under the LDRs (40 CFR 268),

materials must meet land disposal restriction (LDR) treatment standards prior to placement in a RCRA land disposal unit (landfill, land treatment unit, waste pile, or surface impoundment). Wastes subject to the LDRs include solvents, electroplating wastes, heavy metals, and acids. Generators of waste subject to the LDRs must provide notification of such to the designated TSD facility to ensure proper treatment prior to disposal.

- **Used Oil Management Standards** (40 CFR Part 279) impose management requirements affecting the storage, transportation, burning, processing, and re-refining of the used oil. For parties that merely generate used oil, regulations establish storage standards. For a party considered a used oil marketer (one who generates and sells off-specification used oil directly to a used oil burner), additional tracking and paperwork requirements must be satisfied.
- **Tanks and Containers** used to store hazardous waste with a high volatile organic concentration must meet emission standards under RCRA. Regulations (40 CFR Part 264-265, Subpart CC) require generators to test the waste to determine the concentration of the waste, to satisfy tank and container emissions standards, and to inspect and monitor regulated units. These regulations apply to all facilities who store such waste, including generators operating under the 90-day accumulation rule.
- **Underground Storage Tanks** (USTs) containing petroleum and hazardous substances are regulated under Subtitle I of RCRA. Subtitle I regulations (40 CFR Part 280) contain tank design and release detection requirements, as well as financial responsibility and corrective action standards for USTs. The UST program also establishes increasingly stringent standards, including upgrade requirements for existing tanks, that must be met by 1998.
- **Boilers and Industrial Furnaces** (BIFs) that use or burn fuel containing hazardous waste must comply with strict design and operating standards. BIF regulations (40 CFR Part 266, Subpart H) address unit design, provide performance standards, require emissions monitoring, and restrict the type of waste that may be burned.

EPA's RCRA/Superfund/UST Hotline, at (800) 424-9346,

responds to questions and distributes guidance regarding all RCRA regulations. The RCRA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Comprehensive Environmental Response, Compensation, And Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), a 1980 law commonly known as Superfund, authorizes EPA to respond to releases, or threatened releases, of hazardous substances that may endanger public health, welfare, or the environment. CERCLA also enables EPA to force parties responsible for environmental contamination to clean it up or to reimburse the Superfund for response costs incurred by EPA. The Superfund Amendments and Reauthorization Act (SARA) of 1986 revised various sections of CERCLA, extended the taxing authority for the Superfund, and created a free-standing law, SARA Title III, also known as the Emergency Planning and Community Right-to-Know Act (EPCRA).

The CERCLA **hazardous substance release reporting regulations** (40 CFR Part 302) direct the person in charge of a facility to report to the National Response Center (NRC) any environmental release of a hazardous substance which exceeds a reportable quantity. Reportable quantities are defined and listed in 40 CFR § 302.4. A release report may trigger a response by EPA, or by one or more Federal or State emergency response authorities.

EPA implements **hazardous substance responses** according to procedures outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300). The NCP includes provisions for permanent cleanups, known as remedial actions, and other cleanups referred to as "removals." EPA generally takes remedial actions only at sites on the National Priorities List (NPL), which currently includes approximately 1300 sites. Both EPA and states can act at other sites; however, EPA provides responsible parties the opportunity to conduct removal and remedial actions and encourages community involvement throughout the Superfund response process.

EPA's RCRA/Superfund/UST Hotline, at (800) 424-9346, answers questions and references guidance pertaining to the Superfund program. The CERCLA Hotline operates weekdays

from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Emergency Planning And Community Right-To-Know Act

The Superfund Amendments and Reauthorization Act (SARA) of 1986 created the Emergency Planning and Community Right-to-Know Act (EPCRA, also known as SARA Title III), a statute designed to improve community access to information about chemical hazards and to facilitate the development of chemical emergency response plans by State and local governments. EPCRA required the establishment of State emergency response commissions (SERCs), responsible for coordinating certain emergency response activities and for appointing local emergency planning committees (LEPCs).

EPCRA and the EPCRA regulations (40 CFR Parts 350-372) establish four types of reporting obligations for facilities which store or manage specified chemicals:

- **EPCRA §302** requires facilities to notify the SERC and LEPC of the presence of any "extremely hazardous substance" (the list of such substances is in 40 CFR Part 355, Appendices A and B) if it has such substance in excess of the substance's threshold planning quantity, and directs the facility to appoint an emergency response coordinator.
- **EPCRA §304** requires the facility to notify the SERC and the LEPC in the event of a release exceeding the reportable quantity of a CERCLA hazardous substance or an EPCRA extremely hazardous substance.
- **EPCRA §§311 and 312** require a facility at which a hazardous chemical, as defined by the Occupational Safety and Health Act, is present in an amount exceeding a specified threshold to submit to the SERC, LEPC, and local fire department material safety data sheets (MSDSs) or lists of MSDSs and hazardous chemical inventory forms (also known as Tier I and II forms). This information helps the local government respond in the event of a spill or release of the chemical.
- **EPCRA §313** requires manufacturing facilities included in SIC codes 20 through 39, which have ten or more employees, and which manufacture, process, or use specified chemicals in amounts greater than threshold

quantities, to submit an annual toxic chemical release report. This report, commonly known as the Form R, covers releases and transfers of toxic chemicals to various facilities and environmental media, and allows EPA to compile the national Toxic Release Inventory (TRI) database.

All information submitted pursuant to EPCRA regulations is publicly accessible, unless protected by a trade secret claim.

EPA's EPCRA Hotline, at (800) 535-0202, answers questions and distributes guidance regarding the emergency planning and community right-to-know regulations. The EPCRA Hotline operates weekdays from 8:30 a.m. to 7:30 p.m., EST, excluding Federal holidays.

Clean Water Act

The primary objective of the Federal Water Pollution Control Act, commonly referred to as the Clean Water Act (CWA), is to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters. Pollutants regulated under the CWA include "priority" pollutants, including various toxic pollutants; "conventional" pollutants, such as biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, oil and grease, and pH; and "non-conventional" pollutants, including any pollutant not identified as either conventional or priority.

The CWA regulates both direct and indirect discharges. The **National Pollutant Discharge Elimination System (NPDES)** program (CWA §402) controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either EPA or an authorized State (EPA has presently authorized forty States to administer the NPDES program), contain industry-specific, technology-based and/or water quality-based limits, and establish pollutant monitoring and reporting requirements. A facility that intends to discharge into the nation's waters must obtain a permit prior to initiating its discharge. A permit applicant must provide quantitative analytical data identifying the types of pollutants present in the facility's effluent. The permit will then set forth the conditions and effluent limitations under which a facility may make a discharge.

A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards, that were designed to protect designated uses of surface waters, such as supporting aquatic life or recreation. These standards, unlike the technological standards, generally do not take into account technological feasibility or costs. Water quality criteria and standards vary from State to State, and site to site, depending on the use classification of the receiving body of water. Most States follow EPA guidelines which propose aquatic life and human health criteria for many of the 126 priority pollutants.

Storm Water Discharges

In 1987 the CWA was amended to require EPA to establish a program to address **storm water discharges**. In response, EPA promulgated the NPDES storm water permit application regulations. Storm water discharge associated with industrial activity means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant (40 CFR 122.26(b)(14)). These regulations require that facilities with the following storm water discharges apply for a NPDES permit: (1) a discharge associated with industrial activity; (2) a discharge from a large or medium municipal storm sewer system; or (3) a discharge which EPA or the State determines to contribute to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

The term "storm water discharge associated with industrial activity" means a storm water discharge from one of 11 categories of industrial activity defined at 40 CFR 122.26. Six of the categories are defined by SIC codes while the other five are identified through narrative descriptions of the regulated industrial activity. If the primary SIC code of the facility is one of those identified in the regulations, the facility is subject to the storm water permit application requirements. If any activity at a facility is covered by one of the five narrative categories, storm water discharges from those areas where the activities occur are subject to storm water discharge permit application requirements.

Those facilities/activities that are subject to storm water discharge permit application requirements are identified below. To determine whether a particular facility falls within one of

these categories, the regulation should be consulted.

Category i: Facilities subject to storm water effluent guidelines, new source performance standards, or toxic pollutant effluent standards.

Category ii: Facilities classified as SIC 24-lumber and wood products (except wood kitchen cabinets); SIC 26-paper and allied products (except paperboard containers and products); SIC 28-chemicals and allied products (except drugs and paints); SIC 29-petroleum refining; and SIC 311-leather tanning and finishing.

Category iii: Facilities classified as SIC 10-metal mining; SIC 12-coal mining; SIC 13-oil and gas extraction; and SIC 14-nonmetallic mineral mining.

Category iv: Hazardous waste treatment, storage, or disposal facilities.

Category v: Landfills, land application sites, and open dumps that receive or have received industrial wastes.

Category vi: Facilities classified as SIC 5015-used motor vehicle parts; and SIC 5093-automotive scrap and waste material recycling facilities.

Category vii: Steam electric power generating facilities.

Category viii: Facilities classified as SIC 40-railroad transportation; SIC 41-local passenger transportation; SIC 42-trucking and warehousing (except public warehousing and storage); SIC 43-U.S. Postal Service; SIC 44-water transportation; SIC 45-transportation by air; and SIC 5171-petroleum bulk storage stations and terminals.

Category ix: Sewage treatment works.

Category x: Construction activities except operations that result in the disturbance of less than five acres of total land area.

Category xi: Facilities classified as SIC 20-food and kindred products; SIC 21-tobacco products; SIC 22-textile mill products; SIC 23-apparel related products; SIC 2434-wood kitchen

cabinets manufacturing; SIC 25-furniture and fixtures; SIC 265-paperboard containers and boxes; SIC 267-converted paper and paperboard products; SIC 27-printing, publishing, and allied industries; SIC 283-drugs; SIC 285-paints, varnishes, lacquer, enamels, and allied products; SIC 30-rubber and plastics; SIC 31-leather and leather products (except leather and tanning and finishing); SIC 323-glass products; SIC 34-fabricated metal products (except fabricated structural metal); SIC 35-industrial and commercial machinery and computer equipment; SIC 36-electronic and other electrical equipment and components; SIC 37-transportation equipment (except ship and boat building and repairing); SIC 38-measuring, analyzing, and controlling instruments; SIC 39-miscellaneous manufacturing industries; and SIC 4221-4225-public warehousing and storage.

Pretreatment Program

Another type of discharge that is regulated by the CWA is one that goes to a publicly-owned treatment works (POTWs). The national **pretreatment program** (CWA §307(b)) controls the indirect discharge of pollutants to POTWs by "industrial users." Facilities regulated under §307(b) must meet certain pretreatment standards. The goal of the pretreatment program is to protect municipal wastewater treatment plants from damage that may occur when hazardous, toxic, or other wastes are discharged into a sewer system and to protect the quality of sludge generated by these plants. Discharges to a POTW are regulated primarily by the POTW itself, rather than the State or EPA.

EPA has developed technology-based standards for industrial users of POTWs. Different standards apply to existing and new sources within each category. "Categorical" pretreatment standards applicable to an industry on a nationwide basis are developed by EPA. In addition, another kind of pretreatment standard, "local limits," are developed by the POTW in order to assist the POTW in achieving the effluent limitations in its NPDES permit.

Regardless of whether a State is authorized to implement either the NPDES or the pretreatment program, if it develops its own program, it may enforce requirements more stringent than Federal standards.

EPA's Office of Water, at (202) 260-5700, will direct callers

with questions about the CWA to the appropriate EPA office. EPA also maintains a bibliographic database of Office of Water publications which can be accessed through the Ground Water and Drinking Water resource center, at (202) 260-7786.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) mandates that EPA establish regulations to protect human health from contaminants in drinking water. The law authorizes EPA to develop national drinking water standards and to create a joint Federal-State system to ensure compliance with these standards. The SDWA also directs EPA to protect underground sources of drinking water through the control of underground injection of liquid wastes.

EPA has developed primary and secondary drinking water standards under its SDWA authority. EPA and authorized States enforce the primary drinking water standards, which are contaminant-specific concentration limits that apply to certain public drinking water supplies. Primary drinking water standards consist of maximum contaminant level goals (MCLGs), which are non-enforceable health-based goals, and maximum contaminant levels (MCLs), which are enforceable limits set as close to MCLGs as possible, considering cost and feasibility of attainment.

The SDWA **Underground Injection Control (UIC)** program (40 CFR Parts 144-148) is a permit program which protects underground sources of drinking water by regulating five classes of injection wells. UIC permits include design, operating, inspection, and monitoring requirements. Wells used to inject hazardous wastes must also comply with RCRA corrective action standards in order to be granted a RCRA permit, and must meet applicable RCRA land disposal restrictions standards. The UIC permit program is primarily State-enforced, since EPA has authorized all but a few States to administer the program.

The SDWA also provides for a Federally-implemented Sole Source Aquifer program, which prohibits Federal funds from being expended on projects that may contaminate the sole or principal source of drinking water for a given area, and for a State-implemented Wellhead Protection program, designed to protect drinking water wells and drinking water recharge areas.

EPA's Safe Drinking Water Hotline, at (800) 426-4791, answers questions and distributes guidance pertaining to SDWA standards. The Hotline operates from 9:00 a.m. through 5:30 p.m., EST, excluding Federal holidays.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) granted EPA authority to create a regulatory framework to collect data on chemicals in order to evaluate, assess, mitigate, and control risks which may be posed by their manufacture, processing, and use. TSCA provides a variety of control methods to prevent chemicals from posing unreasonable risk.

TSCA standards may apply at any point during a chemical's life cycle. Under TSCA §5, EPA has established an inventory of chemical substances. If a chemical is not already on the inventory, and has not been excluded by TSCA, a premanufacture notice (PMN) must be submitted to EPA prior to manufacture or import. The PMN must identify the chemical and provide available information on health and environmental effects. If available data are not sufficient to evaluate the chemical's effects, EPA can impose restrictions pending the development of information on its health and environmental effects. EPA can also restrict significant new uses of chemicals based upon factors such as the projected volume and use of the chemical.

Under TSCA §6, EPA can ban the manufacture or distribution in commerce, limit the use, require labeling, or place other restrictions on chemicals that pose unreasonable risks. Among the chemicals EPA regulates under §6 authority are asbestos, chlorofluorocarbons (CFCs), and polychlorinated biphenyls (PCBs).

EPA's TSCA Assistance Information Service, at (202) 554-1404, answers questions and distributes guidance pertaining to Toxic Substances Control Act standards. The Service operates from 8:30 a.m. through 4:30 p.m., EST, excluding Federal holidays.

Clean Air Act

The Clean Air Act (CAA) and its amendments, including the Clean Air Act Amendments (CAAA) of 1990, are designed to "protect and enhance the nation's air resources so as to promote

the public health and welfare and the productive capacity of the population.” The CAA consists of six sections, known as Titles, which direct EPA to establish national standards for ambient air quality and for EPA and the States to implement, maintain, and enforce these standards through a variety of mechanisms. Under the CAAA, many facilities will be required to obtain permits for the first time. State and local governments oversee, manage, and enforce many of the requirements of the CAAA. CAA regulations appear at 40 CFR Parts 50-99.

Pursuant to Title I of the CAA, EPA has established national ambient air quality standards (NAAQSs) to limit levels of "criteria pollutants," including carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide. Geographic areas that meet NAAQSs for a given pollutant are classified as attainment areas; those that do not meet NAAQSs are classified as non-attainment areas. Under §110 of the CAA, each State must develop a State Implementation Plan (SIP) to identify sources of air pollution and to determine what reductions are required to meet Federal air quality standards.

Title I also authorizes EPA to establish New Source Performance Standards (NSPSs), which are nationally uniform emission standards for new stationary sources falling within particular industrial categories. NSPSs are based on the pollution control technology available to that category of industrial source but allow the affected industries the flexibility to devise a cost-effective means of reducing emissions.

Under Title I, EPA establishes and enforces National Emission Standards for Hazardous Air Pollutants (NESHAPs), nationally uniform standards oriented towards controlling particular hazardous air pollutants (HAPs). Title III of the CAAA further directed EPA to develop a list of sources that emit any of 189 HAPs, and to develop regulations for these categories of sources. To date EPA has listed 174 categories and developed a schedule for the establishment of emission standards. The emission standards will be developed for both new and existing sources based on "maximum achievable control technology" (MACT). The MACT is defined as the control technology achieving the maximum degree of reduction in the emission of the HAPs, taking into account cost and other factors.

Title II of the CAA pertains to mobile sources, such as cars, trucks, buses, and planes. Reformulated gasoline, automobile

pollution control devices, and vapor recovery nozzles on gas pumps are a few of the mechanisms EPA uses to regulate mobile air emission sources.

Title IV establishes a sulfur dioxide emissions program designed to reduce the formation of acid rain. Reduction of sulfur dioxide releases will be obtained by granting to certain sources limited emissions allowances, which, beginning in 1995, will be set below previous levels of sulfur dioxide releases.

Title V of the CAAA of 1990 created a permit program for all "major sources" (and certain other sources) regulated under the CAA. One purpose of the operating permit is to include in a single document all air emissions requirements that apply to a given facility. States are developing the permit programs in accordance with guidance and regulations from EPA. Once a State program is approved by EPA, permits will be issued and monitored by that State.

Title VI is intended to protect stratospheric ozone by phasing out the manufacture of ozone-depleting chemicals and restrict their use and distribution. Production of Class I substances, including 15 kinds of chlorofluorocarbons (CFCs), will be phased out entirely by the year 2000, while certain hydrochlorofluorocarbons (HCFCs) will be phased out by 2030.

EPA's Control Technology Center, at (919) 541-0800, provides general assistance and information on CAA standards. The Stratospheric Ozone Information Hotline, at (800) 296-1996, provides general information about regulations promulgated under Title VI of the CAA, and EPA's EPCRA Hotline, at (800) 535-0202, answers questions about accidental release prevention under CAA §112(r). In addition, the Technology Transfer Network Bulletin Board System (modem access (919) 541-5742)) includes recent CAA rules, EPA guidance documents, and updates of EPA activities.

VI.B. Industry-Specific Requirements

Three types of laws govern and/or regulate the mining of metal resources. The first type, (i.e., the Mining in National Parks Act and the Wild and Scenic Rivers Act), define areas that are off-limits to metal mining. The second type of law, (i.e., the General Mining Law of 1872), defines methods for allocating

metal deposits for extraction. The third type of law, those governing the extraction process and establishing restrictions on the types and amounts of wastes that may be generated, comprises most of the following discussion.

General Mining Law of 1872

The General Mining Law of 1872 is one of the major statutes that direct the Federal government's land management policy. The Mining Law grants free access to individuals and corporations to prospect for minerals in public domain lands, and allows them, on discovery, to stake a claim on that deposit. According to staff in EPA's Office of Solid Waste, roughly 40 percent of U.S. mines operate under this provision.

The Bureau of Land Management (BLM), under the Department of the Interior, has authority to regulate these mining claim operations under the Federal Land Policy and Management Act (FLPMA) of 1976. FLPMA established BLM's general land management and planning authority (43 CFR Part 3809), and requires that mining operations on Federal lands are regulated to prevent "unnecessary and undue degradation."

While mining operations are subject to varying levels of scrutiny, all operations must be reclaimed and must comply with all applicable State and Federal laws, including air and water quality standards such as those established under the CAA and CWA, and standards for the disposal of solid waste under RCRA.

In addition to requiring reclamation bond posting, BLM requires mining operations that involve cyanide leaching to meet the following standards:

- Fencing must be used to ensure protection of the public, livestock, and wildlife
- Facilities must be designed to contain the maximum operating water balance in addition to the water from a 100-year, 24-hour storm event; containment ponds must be included in all containment systems
- Leakage detection and recovery systems must be designed for heap and solution containment structures; monitoring of ground and surface water through closure and final reclamation is required

- Cyanide solution and heaps must be neutralized or detoxified.

Although BLM has general management authority for the mineral resources on Federal lands, the Forest Service (FS) also regulates mining activities on Forest Service land, with a similar mandate to minimize adverse environmental impacts. The National Forest Management Act of 1976 provides the Forest Service with authorities and responsibilities similar to those provided to BLM by FLPMA. Like BLM's regulations, they require compliance with the Clean Water Act and other environmental statutes and regulations. FS generally consults with appropriate agencies of the Department of the Interior, including BLM, in reviewing technical aspects of proposed mining operations. FS also conducts environmental assessments of proposed plans and, if necessary, prepares EISs pursuant to the National Environmental Policy Act. FS also specifies standards for reclamation and may require bond posting.

EPA is currently pursuing a Memorandum of Understanding (MOU) with the Department of the Interior to formally coordinate regulatory and enforcement efforts concerning mining operations on Federal lands. Ongoing enforcement efforts are commonly coordinated with BLM State offices, as part of a broader strategy to simplify and coordinate oversight of mining operations at the State and Federal level.

Clean Water Act (CWA)

Under the Clean Water Act, National Pollution Discharge Elimination System (NPDES) permits must be acquired before any pollutant can be discharged from a point source into U.S. waters. EPA has established national technology-based effluent limitation guidelines for ore mining and dressing operations (40 CFR Part 440). These include new source performance standards based on Best Available Demonstrated Technology (BADT). For mine and mill point source discharges, 40 CFR Part 440 establishes the maximum levels of pollutants that can be released daily and monthly. The discharger must not exceed the daily allowance nor the average allowed over an entire month in order to comply with regulations. For most metals, the monthly averages are one-half the daily maximums for metal pollutants.

Contaminated storm water runoff from some mining operations

has been documented as causing water quality degradation, according to a Technical Resource Document on extraction and beneficiation of copper by EPA's OSW. In the past, point source storm water discharges have received limited emphasis under the NPDES program. However, EPA has promulgated regulations that specifically address point source discharges of storm water from industrial facilities, including active and inactive/abandoned mine sites (55 FR 47990; November 16, 1990). These regulations require NPDES permits for all discharges of contaminated storm water. The Water Quality Act of 1987 added §402(p)(2)(B), requiring that point source discharges of storm water associated with industrial activity (including active and inactive mining operations) be permitted by October, 1992. This provision includes discharges from "areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water." The storm water permitting regulations address discharges from mine sites that occur as a result of precipitation events where the runoff from those sites is contaminated by exposed overburden, raw material, intermediate products, finished products, byproducts, or waste materials resulting from present or past mining activities.

In the case of active mine sites, the storm water regulations apply to both storm water discharges from mining operations as well as to areas used for the storage and maintenance of material handling equipment, shipping and receiving areas, and haul roads. For inactive or abandoned mines, all point source discharges of contaminated storm water (i.e., storm water that has come into contact with mine facilities, materials or wastes) must be covered under an NPDES storm water permit. Some storm water discharges from mine sites are not subject to NPDES permitting, including storm water that is not contaminated by contact with overburden, raw material, or waste materials located on the site of the operation.

The following exhibit highlights examples of discharges from ore mining and dressing facilities that are subject to 40 CFR Part 440 or to storm water permitting.

Exhibit 26

Mine Discharges Subject to Permitting

Runoff/drainage discharges subject to 40 CFR Part 440 effluent limitation guidelines	Subject to storm water permitting (not subject to 40 CFR Part 440)
Land application area Crusher area Spent ore piles, surge piles, ore stockpiles, waste rock/overburden piles Pumped and unpumped drainage and mine water from pits/underground mines Seeps/French drains On-site haul roads, if constructed of waste rock or spent ore or if wastewater subject to mine drainage limits is used for dust control Tailings dams/dikes when constructed of waste rock/tailings Unreclaimed disturbed areas	Topsoil piles Haul roads not on active mining area On-site haul roads not constructed of waste rock or spent ore (unless wastewater subject to mine drainage limits is used for dust control) Tailings dams, dikes when not constructed of waste rock/tailings Concentration/mill building/site (if discharge is storm water only, with no contact with piles) Reclaimed areas released from reclamation bonds prior to 12/17/90 Partially, inadequately reclaimed areas or areas not released from reclamation bond Most ancillary areas (e.g., chemical and explosives storage, power plant, equipment/truck maintenance and wash areas, etc.)

The concentration of pollutants discharged in mine drainage from mines operated to obtain copper bearing ores, lead bearing ores, zinc bearing ores, gold bearing ores, silver bearing ores, or any combination of these ores in open-pit or underground operations other than placer deposits shall not exceed:

**Exhibit 27
Mine Discharge Limitations**

Effluent Characteristic	Maximum of any 1 day (mg/l)	Average of daily values for 30 days (mg/l)
TSS	30	20
Cu	30	15
Zn	15	7.5
Pb	6	3
Hg	2	1
pH	*	*
*Within the range 6.0 to 9.0		

Source: 40 CFR 440.102(a).

Beneficiation is regulated by the same effluent limitation guidelines as extraction processes.

The concentration of pollutants discharged from mills that employ the froth flotation process alone or in conjunction with other processes, for the beneficiation of copper ores, lead ores, zinc ores, gold ores, or silver ores, or any combination of these ores shall not exceed:

Exhibit 28
Mill Discharge Limitations

Effluent Characteristic	Maximum for any 1 day	Average of daily values for 30 consecutive days
TSS	30	20
Cu	30	15
Zn	10	5
Pb	6	3
Hg	0.002	0.001
Cd	10	0.05
pH	*	*
*Within the range 6.0 to 9.0		

Source: 40 CFR 440.102(b).

Safe Drinking Water Act (SDWA)

The Safe Drinking Water Act may also apply to mine operations if primary drinking water sources and Class 3 wells are affected by mine wastewater releases. EPA regulates cadmium, lead, and arsenic under its primary drinking water standards (40 CFR 141.11(b)), and regulates copper, iron, manganese, and zinc under its secondary drinking water standards (40 CFR 143.3).

Resource Conservation and Recovery Act (RCRA)

The Bevill Amendment

In 1980, Congress amended RCRA in the Solid Waste Disposal Act Amendments, adopting what has been dubbed the Bevill Amendment, after Representative Tom Bevill of Alabama. The amendment temporarily exempted from Subtitle C regulation solid waste from ore and mineral extraction, beneficiation, and processing. The Amendment directed EPA either to develop Subtitle C regulations for the waste or determine that the exemption should continue, and to present its findings in a report to Congress.

EPA modified its hazardous waste regulations to reflect the Bevill exclusion and issued a preliminary, and quite broad, interpretation of the exclusion's scope. In particular, it interpreted the exclusion as covering "solid waste from the exploration, mining, milling, smelting and refining of ores and minerals." Based on this broad interpretation of the Bevill Amendment, EPA suspended its Subtitle C listing of six hazardous smelter wastes.

In 1985 the U.S. District Court for the District of Columbia awarded judgment to the Environmental Defense Fund and two public interest groups that had sued EPA for failing to submit the required report to Congress and make the regulatory determination by the statutory deadline. The court imposed two schedules, one for completing studies of extraction and beneficiation wastes and submitting them in a report to Congress, and the second for proposing reinterpretation of mineral-processing wastes. In so doing, the court effectively split the wastes that might be eligible for exclusion from regulation into two groups: mineral extraction and beneficiation wastes; and mineral processing wastes.

In December 1985 EPA submitted a report to Congress on mining wastes (*1985 Report to Congress: Wastes from the Extraction and Beneficiation of Metallic Ores, Phosphate Rock, Asbestos, Overburden from Uranium Mining, and Oil Shale*) in which EPA found that some mining wastes exhibit hazardous characteristics, that waste management practices have caused environmental damage, and that the range of risk from mining waste is broad. In July 1986 EPA published a regulatory determination, upheld in subsequent court challenges, that RCRA Subtitle C regulation of extraction and beneficiation wastes was unwarranted because mining wastes tend to be disposed of in arid climates, facilities and wastes are located in sparsely populated areas where human contact is minimal, and waste volumes are high. It also determined that it should develop a risk-based, State-run mining waste program under RCRA Subtitle D.

In keeping with its court-ordered directive to reinterpret the Mining Waste exclusion for mineral processing wastes, EPA proposed to narrow the scope of the exclusion for mineral-processing wastes to include only a few specific waste streams. Unable to articulate criteria for selecting these wastes, EPA later withdrew this proposal and was subsequently sued by the Environmental Defense Fund. The courts ruled against EPA, holding that the Agency's interpretation of Bevill exclusions was overbroad. The court ordered EPA to restrict the scope of the exclusion as it applied to mineral-processing wastes to include only "large volume, low hazard" wastes.

In a series of rulemaking notices, EPA reinterpreted the exclusion for mineral-processing wastes and defined which mineral-processing wastes met the high-volume, low-hazard criteria. The vast majority of mineral-processing wastes did not meet both criteria. EPA published its final regulatory determination in 1991, in compliance with a court-ordered deadline. The final rule permanently retains the Bevill exemption for 20 mineral-processing wastes. EPA determined that regulation under RCRA Subtitle C was inappropriate for these wastes because of the extremely high cost to industry and the technical infeasibility of managing them under Subtitle C requirements; 18 of the wastes are subject to applicable State requirements, while the remaining two (phosphogypsum and phosphoric acid process waste water) are currently being evaluated by EPA.

Wastes from the extraction and beneficiation of ores and minerals remain exempt from Subtitle C requirements, irrespective of their chemical characteristics; EPA may, in the future, evaluate the appropriateness of regulating these wastes under RCRA Subtitle D as an industrial waste. Wastes from mineral processing, however, are not exempt from Subtitle C unless they are one of the 20 specific wastes identified in EPA's final ruling.

In addition, only wastes that are uniquely associated with the extraction and beneficiation of ores and minerals (or one of the 20 listed mineral processing wastes) are excluded from hazardous waste regulation. Non-uniquely associated wastes are typically generated as a result of maintaining mining machinery or as a result of other facility activities, and continue to be subject to Subtitle C regulation. These non-uniquely associated wastes may include used oil, polychlorinated biphenyls, discarded commercial chemicals, cleaning solvents, filters, empty drums, laboratory wastes, and general refuse.

Determining how and under what circumstances the Bevill Amendment exclusions should be interpreted in regulating mining wastes continues to be a subject of discussion and study, at least in part because many beneficiation terms are used to describe activities common to a wide range of nonexempt industries and to describe mineral-processing operations that occur at the same location as the beneficiation operations. Beneficiation and mineral-processing operations are often closely linked; in order to apply Subtitle C regulations at a mine site, a regulator often must prove that the waste is not a beneficiation waste. Because a variety of regulators, at both Federal and State levels, are independently interpreting the Bevill rules, the potential for inconsistent interpretations is significant. Staff in EPA's OSW have suggested the following guidelines for regulators and the regulated community in distinguishing between exempt and nonexempt wastes at mines and mineral-processing sites:

- Determine whether the material is considered a solid waste under RCRA.
- Determine whether the facility is using a primary ore or mineral to produce a final or intermediate product and also whether 50 percent of the feedstocks are from secondary sources.

- Establish whether the material and the operation that generates it are uniquely associated with mineral production.
- Determine where in the sequence of operations beneficiation ends and mineral processing begins.
- If the material is a mineral-processing waste, determine whether it is one of the 20 special wastes from mineral processing.

This sequence will result in one of three determinations: 1) the material is not a solid waste and therefore not subject to RCRA; 2) the material is a solid waste but is exempt from RCRA Subtitle C because of the Mining Waste Exclusion; or 3) the material is a solid waste that is not exempt from RCRA Subtitle C and is subject to regulation.

Comprehensive Response Compensation and Liability Act (CERCLA)

Although Bevill wastes are excluded from regulation under RCRA Subtitle C, they can be addressed under CERCLA. Mining companies may be liable under CERCLA for the release or threat of release of hazardous substances, covering releases to air, surface water, groundwater and soils. Many mines, where practices did not incorporate the safeguards now required under the CWA, allowed runoff from mine and tailings sites to flow into nearby streams and lakes. Even newer mines, which have been subject to CWA regulations, have been targeted for CERCLA enforcement. Some of these mines, such as Colorado's Summitville Mine, have been listed on the National Priorities List (NPL). Mine owners may also be liable for damages to natural resources as a result of mining activity.

Clean Air Act (CAA)

Under §111 of CAA, New Source Performance Standards (NSPS) applicable to metallic mineral-processing plants have been established (40 CFR 60 Subpart LL). These standards regulate emissions of particulate matter in metal mining operations in crushers, conveyor belt transfer points, thermal dryers, product packaging stations, storage bins, truck loading and unloading stations, and rail car loading and unloading. Although all underground mining facilities are exempt from these provisions, fugitive dust emissions from mining activities

may be regulated (usually by requiring dust suppression management activities) through State permit programs established to meet Federal NAAQSs.

National Environmental Policy Act (NEPA)

NEPA requires that all Federal agencies prepare detailed statements assessing the environmental impact of, and alternatives to, major Federal actions that may "significantly affect" the environment. An environmental impact statement (EIS) must provide a fair and full discussion of significant environmental impacts and inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts on the environment; EISs must explore and evaluate all reasonable alternatives, even if they are not within the authority of the lead agency. NEPA authorities are solely procedural; NEPA cannot compel selection of the environmentally preferred alternative.

Federal actions specifically related to mining that may require EISs include Federal land management agency (e.g. BLM and Forest Service) approval of plans of operations for hardrock mining on Federally-managed lands. All effected media (e.g., air, water, soil, geologic, cultural, economic resources, etc.) must be addressed. The EIS provides the basis for the permit decision; for example, an NPDES permit may be issued or denied based on EPA's review of the overall impacts, not just discharge-related impacts, of the proposed project and alternatives. Issues may include the potential for acid rock drainage, aquatic and terrestrial habitat value and losses, sediment production, mitigation, and reclamation.

Endangered Species Act (ESA)

The ESA provides a means to protect threatened or endangered species and the ecosystems that support them. It requires Federal agencies to ensure that activities undertaken on either Federal or non-Federal property do not have adverse impacts on threatened or endangered species or their habitat. In a June 1995 ruling, the U.S. Supreme Court upheld interpretations of the Act that allow agencies to consider impact on habitat as a potential form of prohibited "harm" to endangered species. Agencies undertaking a Federal action (such as a BLM review of proposed mining operations) must consult with the U.S. Fish and Wildlife Service (USFWS); an EIS must be prepared if

"any major part of a new source will have significant adverse effect on the habitat" of a Federally or State-listed threatened or endangered species.

State Statutes

In addition to Federal laws, State and common laws also affect waste generation from mining activities. State law generally requires that permits be obtained prior to commencement of mining activities; permits may require design, performance, closure, and reclamation standards, and may impose monitoring requirements. Under common law, a mine owner may be liable for trespassing if wastes migrate into and damage another's property, or if the waste impacts the community as a whole, a miner may be liable for creating a public nuisance. Over the last five years several States have substantially altered their mining regulations to prevent the damage caused by past mining operations. Considerable disagreement remains, however, between mining industry groups and the environmental community regarding the effectiveness of these State regulations in preventing damage to the environment.

Many Western States require mining operations to obtain reclamation bonds and mining permits that are designed to regulate and monitor mining activity. States that require bonding and/or permitting include Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming. To regulate mining activity in the State of Colorado, for example, the State requires mining operations to obtain: 1) a performance bond, 2) a reclamation bond, and 3) a permit. The performance bond outlines what the mining operation intends to do on the land, and is simply a promise from the mining operation that it will reclaim the land. This bond gives Colorado the authority to pursue reclamation costs from mining operations that fail to properly reclaim the land. The reclamation bond, also known as a financial warranty, equals the cost the State would incur if it were to hire someone to reclaim the site should the mining operation fail to do so. Although performance bonds are updated periodically, the bonds have not always been adequate to cover closure costs.

VI.C. Pending and Proposed Regulatory Requirements

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

The Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA) Section 313 mandates that owners and operators of facilities that manufacture, process, or otherwise use a listed chemical report to EPA their annual releases of these chemicals to any environmental medium. EPA makes this information available to the public in the form of the Toxics Release Inventory (TRI). TRI currently requires reporting from facilities in SIC codes 20-39 that meet various threshold requirements.

EPCRA Section 313 gives EPA discretionary authority to modify the coverage of facilities required to report to EPA for inclusion in the TRI. EPA is considering expanding the TRI through the development of reporting requirements for additional facilities. These additional facilities include a list of 25 SIC codes that contribute 99 percent of the non-manufacturing TRI chemical loadings to the environment. SIC code 10 is among these 25 SIC codes. EPA anticipates publication of a proposed rule in late 1995 or early 1996 requiring additional facilities to report the use, release, and transfer of TRI chemicals.

Clean Water Act (CWA)

A comprehensive bill was introduced in Congress in 1995 to reauthorize the Clean Water Act. The bill may affect EPA's authority to require changes in production processes, products, or raw materials to control emissions of toxins; may require risk assessments for water quality standards, effluent limitations or other regulatory requirements; and may require social, economic, and environmental benefits to be weighed in establishing regulations. Potentially large sectors of the mining industry could be affected by this legislation.

Clean Air Act (CAA)

EPA continues to prepare rules for industry sources subject to hazardous air pollutant standards under the CAA, as amended. The sources are those that emit one or more of the 189 substances defined as hazardous air pollutants (HAPs) under the CAA. The EPA published a list of these sources in 1992 and has begun to define Maximum Achievable Control Standards that will apply to them. Although the timetable for issuing

regulatory controls varies, proposed standards for most mineral industries are due by November 15, 1997.

EPA is also reviewing and updating national ambient air quality standards (NAAQS) for particulate matter, ozone, and sulfur dioxide to incorporate new scientific and technical information that has become available since the last reviews. Based on these revised data, EPA will determine whether revisions to the standards are appropriate. The metal mining sector will be affected by any revisions to these standards.

Resource Conservation and Recovery Act (RCRA)

The Hazardous and Solid Waste Amendments of 1984 require EPA to promulgate regulations establishing treatment standards that must be met before hazardous waste may be disposed on land. An announcement of new proposed rulemaking was made on October 24, 1991 in 56 CFR 55160. The proposed rulemaking established treatment standards for certain mineral processing waste and toxicity characteristic metals. Proposed rulemaking is expected mid-1995 and final action is expected mid-1996.

In a July 1986 Regulatory Determination, EPA stated that it was not appropriate to regulate the extraction and beneficiation wastes covered in the 1985 *Report to Congress: Wastes from the Extraction and Beneficiation of Metallic Ores, Phosphate Rock, Asbestos, Overburden from Uranium Mining, and Oil Shale*. Among the reasons cited by EPA for the special treatment of mining wastes were: 1) mining waste is generated in much larger volumes than industrial wastes (the average mining waste facility produces 3,000,000 metric tons of waste annually, while the average RCRA Subtitle C regulated waste producer produces 50,000 metric tons annually); 2) mining waste sites are usually much larger than traditional waste producers. The average tailings pile covers 494 acres and the average mining waste piles cover 126 acres, while the average Subtitle C hazardous waste impoundment of landfill is six to ten acres; 3) mining waste streams are believed to have lower human exposure and risk potential.

As a result, EPA determined that RCRA Subtitle C controls may be neither technically nor economically feasible, nor at times necessary to protect human health and the environment. EPA recommended development of a primarily State-

implemented, site-specific, and risk-based regulatory approach under Subtitle D of RCRA. The result was the preparation of *Strawman I* and *II* proposals, which would regulate material uniquely associated with mining that the regulatory authority determines could pose a threat to human health and the environment, including mill tailings, stockpiled ores, leaching solutions, and water that may accumulate hazardous constituents.

While the Strawman proposals no longer represent a viable and current Agency approach to the mining industry, EPA may in the future evaluate the appropriateness of regulating mining waste under RCRA Subtitle D as an industrial waste.

VII. COMPLIANCE AND ENFORCEMENT PROFILE

Background

To date, EPA has focused much of its attention on measuring compliance with specific environmental statutes. This approach allows the Agency to track compliance with the Clean Air Act, the Resource Conservation and Recovery Act, the Clean Water Act, and other environmental statutes. Within the last several years, the Agency has begun to supplement single-media compliance indicators with facility-specific, multi-media indicators of compliance. In doing so, EPA is in a better position to track compliance with all statutes at the facility level, and within specific industrial sectors.

A major step in building the capacity to compile multimedia data for industrial sectors was the creation of EPA's Integrated Data for Enforcement Analysis (IDEA) system. IDEA has the capacity to "read into" the Agency's single-media databases, extract compliance records, and match the records to individual facilities. The IDEA system can match Air, Water, Waste, Toxics/Pesticides/EPCRA, TRI, and Enforcement Docket records for a given facility, and generate a list of historical permit, inspection, and enforcement activity. IDEA also has the capability to analyze data by geographic area and corporate holder. As the capacity to generate multimedia compliance data improves, EPA will make available more in-depth compliance and enforcement information. Additionally, sector-specific measures of success for compliance assistance efforts are under development.

Compliance and Enforcement Profile Description

Using inspection, violation, and enforcement data from the IDEA system, this section provides information regarding the historical compliance and enforcement activity of this sector. In order to mirror the facility universe reported in the Toxic Chemical Profile, the data reported within this section consist only of records from the TRI reporting universe. With this decision, the selection criteria are consistent across sectors with certain exceptions. For the sectors that do not normally report to the TRI program, data have been provided from EPA's Facility Indexing System (FINDS), which tracks facilities in all

media databases. Please note that in this section EPA does not attempt to define the actual number of facilities that fall within each sector. Instead, the section portrays the records of a subset of facilities within the sector that are well-defined within EPA databases.

As a check on the relative size of the full sector universe, most notebooks contain an estimated number of facilities within the sector according to the Bureau of Census (See Section II). With sectors dominated by small businesses, such as metal finishers and printers, the reporting universe within EPA databases may be small compared to Census data. However, the group selected for inclusion in this data analysis section should be consistent with this sector's general make-up.

Following this introduction is a list defining each data column presented within this section. These values represent a retrospective summary of inspections and enforcement actions, and solely reflect EPA, State, and local compliance assurance activities that have been entered into EPA databases. To identify any changes in trends, the EPA ran two data queries, one for the past five calendar years (August 10, 1990 to August 9, 1995) and the other for the most recent twelve-month period (August 10, 1994 to August 9, 1995). The five-year analysis gives an average level of activity for that period for comparison to the more recent activity.

Because most inspections focus on single-media requirements, the data queries presented in this section are taken from single-media databases. These databases do not provide data on whether inspections are State/local or EPA-led. However, the table breaking down the universe of violations does give the reader a crude measurement of the EPA's and States' efforts within each media program. The presented data illustrate the variations across regions for certain sectors.¹ This variation may be attributable to State/local data entry variations, specific geographic concentrations, proximity to population centers, sensitive ecosystems, highly toxic chemicals used in production, or historical noncompliance. Hence, the exhibited data do not rank regional performance or necessarily reflect which regions have the most compliance problems.

Compliance and Enforcement Data Definitions

General Definitions

Facility Indexing System (FINDS) -- this system assigns a common facility number to EPA single-media permit records. The FINDS identification number allows EPA to compile and review all permit, compliance, enforcement, and pollutant release data for any given regulated facility.

Integrated Data for Enforcement Analysis (IDEA) -- is a data integration system that can retrieve information from the major EPA program office databases. IDEA uses the FINDS identification number to "glue together" separate data records from EPA's databases. This is done to create a "master list" of data records for any given facility. Some of the data systems accessible through IDEA are: AIRS (Air Facility Indexing and Retrieval System, Office of Air and Radiation), PCS (Permit Compliance System, Office of Water), RCRIS (Resource Conservation and Recovery Information System, Office of Solid Waste), NCDB (National Compliance Data Base, Office of Prevention, Pesticides, and Toxic Substances), CERCLIS (Comprehensive Environmental and Liability Information System, Superfund), and TRIS (Toxic Release Inventory System). IDEA also contains information from outside sources, such as Dun and Bradstreet and the Occupational Safety and Health Administration (OSHA). Most data queries displayed in notebook Section VII were conducted using IDEA.

Data Table Column Heading Definitions

Facilities in Search -- are based on the universe of TRI reporters within the listed SIC code range. For industries not covered under TRI reporting requirements, the notebook uses the FINDS universe for executing data queries. The SIC code range selected for each search is defined by each notebook's selected SIC code coverage described in Section II.

Facilities Inspected -- indicates the level of EPA and State agency facility inspections for the facilities in this data search. These values show what percentage of the facility universe is inspected in a 12 or 60 month period. This column does not count non-inspectional compliance activities such as the review of facility-reported discharge reports.

Number of Inspections -- measures the total number of inspections conducted in this sector. An inspection event is counted each time it is entered into a single media database.

Average Time Between Inspections -- provides an average length of time, expressed in months, that a compliance inspection occurs at a facility within the defined universe.

Facilities with One or More Enforcement Actions -- expresses the number of facilities that were party to at least one enforcement action within the defined time period. This category is broken down further into Federal and State actions. Data are obtained for administrative, civil/judicial, and criminal enforcement actions. Administrative actions include Notices of Violation (NOVs). A facility with multiple enforcement actions is only counted once in this column (facility with 3 enforcement actions counts as 1). All percentages that appear are referenced to the number of facilities inspected.

Total Enforcement Actions -- describes the total number of enforcement actions identified for an industrial sector across all environmental statutes. A facility with multiple enforcement actions is counted multiple times (a facility with 3 enforcement actions counts as 3).

State Lead Actions -- shows what percentage of the total enforcement actions are taken by State and local environmental agencies. Varying levels of use by States of EPA data systems may limit the volume of actions accorded State enforcement activity. Some States extensively report enforcement activities into EPA data systems, while other States may use their own data systems.

Federal Lead Actions -- shows what percentage of the total enforcement actions are taken by the U.S. EPA. This value includes referrals from State agencies. Many of these actions result from coordinated or joint State/Federal efforts.

Enforcement to Inspection Rate -- expresses how often enforcement actions result from inspections. This value is a ratio of enforcement actions to inspections, and is presented for comparative purposes only. This measure is a rough indicator of the relationship between inspections and enforcement. This measure simply indicates historically how many enforcement actions can be attributed to inspection activity. Related inspections and enforcement actions under the Clean Water Act (PCS), the Clean Air Act (AFS) and the Resource Conservation and Recovery Act (RCRA) are included in this ratio. Inspections and actions from the TSCA/FIFRA/EPCRA

database are not factored into this ratio because most of the actions taken under these programs are not the result of facility inspections. This ratio does not account for enforcement actions arising from non-inspection compliance monitoring activities (e.g., self-reported water discharges) that can result in enforcement action within the CAA, CWA and RCRA.

Facilities with One or More Violations Identified -- indicates the number and percentage of inspected facilities having a violation identified in one of the following data categories: In Violation or Significant Violation Status (CAA); Reportable Noncompliance, Current Year Noncompliance, Significant Noncompliance (CWA); Noncompliance and Significant Noncompliance (FIFRA, TSCA, and EPCRA); Unresolved Violation and Unresolved High Priority Violation (RCRA). The values presented for this column reflect the extent of noncompliance within the measured time frame, but do not distinguish between the severity of the noncompliance. Percentages within this column can exceed 100 percent because facilities can be in violation status without being inspected. Violation status may be a precursor to an enforcement action, but does not necessarily indicate that an enforcement action will occur.

Media Breakdown of Enforcement Actions and Inspections - - four columns identify the proportion of total inspections and enforcement actions within EPA Air, Water, Waste, and TSCA/FIFRA/EPCRA databases. Each column is a percentage of either the "Total Inspections," or the "Total Actions" column.

VII.A. Metal Mining Compliance History

The following exhibit provides a summary of five-year enforcement and compliance data for the metal mining industry. Consistent with information presented in previous sections, the greatest concentration of metal mining activity occurs in the Western States, where the greatest number of inspections and enforcement actions also occur.

Exhibit 29
Five-Year Enforcement and Compliance
Summary for the Metal Mining Industry

A	B	C	D	E	F	G	H	I	J
Metal Mining SIC 10	Facilities in Search	Facilities Inspected	Number of Inspections	Average Number of Months Between Inspections	Facilities w/One or More Enforcement Actions	Total Enforcement Actions	State Lead Actions	Federal Lead Actions	Enforcement to Inspection Rate
Region I	2	1	1	120	1	1	0%	100%	1.00
Region II	15	11	74	12	2	14	100%	0%	0.19
Region III	9	8	47	11	1	1	100%	0%	0.02
Region IV	28	20	209	8	5	7	86%	14%	0.03
Region V	27	17	129	13	5	15	67%	33%	0.12
Region VI	40	14	56	43	6	17	0%	100%	0.30
Region VII	14	10	91	9	4	12	42%	58%	0.13
Region VIII	135	62	284	29	13	32	100%	0%	0.11
Region IX	54	42	346	9	11	13	31%	69%	0.04
Region X	549	154	282	117	19	43	2%	98%	0.15
Total/Average	873	339	1,519	34	67	155	47%	53%	0.10

VII.B. Comparison of Enforcement Activity Between Selected Industries

Exhibit 30 highlights enforcement and compliance information across selected industries. The metal mining industry had one of the lowest numbers of inspections among those industries represented, as well as the highest average number of months between inspections.

Exhibit 31 provides enforcement and compliance summary data for one year for selected industries. Over half of the facilities inspected were cited for a violation. The metal mining industry also represented the greatest percentage of facilities with enforcement actions taken, at 19 percent.

Exhibit 32 presents inspection and enforcement data by statute for selected industries. As discussed previously, water pollution represents the most common problem associated with the metal mining industry, followed by air. Thirty-four percent of total enforcement actions taken were under the Clean Water Act, while 11 percent were under the Clean Air Act.

Exhibit 33 provides a one-year summary of inspection and enforcement data by statute for selected industries. Again emphasizing the weight given to water pollution in the metal mining industry, inspections under the Clean Water Act represented over 50 percent of total metal mining inspections.

Exhibit 30
Five-Year Enforcement and Compliance
Summary for Selected Industries

A	B	C	D	E	F	G	H	I	J
Industry Sector	Facilities in Search	Facilities Inspected	Number of Inspections	Average Number of Months Between Inspections	Facilities w/One or More Enforcement Actions	Total Enforcement Actions	State Lead Actions	Federal Lead Actions	Enforcement to Inspection Rate
Metal Mining	873	339	1,519	34	67	155	47%	53%	0.10
Non-metallic Mineral Mining	1,143	631	3,422	20	84	192	76%	24%	0.06
Lumber and Wood	464	301	1,891	15	78	232	79%	21%	0.12
Furniture	293	213	1,534	11	34	91	91%	9%	0.06
Rubber and Plastic	1,665	739	3,386	30	146	391	78%	22%	0.12
Stone, Clay, and Glass	468	268	2,475	11	73	301	70%	30%	0.12
Nonferrous Metals	844	474	3,097	16	145	470	76%	24%	0.15
Fabricated Metal	2,346	1,340	5,509	26	280	840	80%	20%	0.15
Electronics/Computers	405	222	777	31	68	212	79%	21%	0.27
Motor Vehicle Assembly	598	390	2,216	16	81	240	80%	20%	0.11
Pulp and Paper	306	265	3,766	5	115	502	78%	22%	0.13
Printing	4,106	1,035	4,723	52	176	514	85%	15%	0.11
Inorganic Chemicals	548	298	3,034	11	99	402	76%	24%	0.13
Organic Chemicals	412	316	3,864	6	152	726	66%	34%	0.19
Petroleum Refining	156	145	3,257	3	110	797	66%	34%	0.25
Iron and Steel	374	275	3,555	6	115	499	72%	28%	0.14
Dry Cleaning	933	245	633	88	29	103	99%	1%	0.16

Exhibit 31
One-Year Enforcement and Compliance
Summary for Selected Industries

A	B	C	D	E		F		G	H
				Number	Percent*	Number	Percent*		
Industry Sector	Facilities in Search	Facilities Inspected	Number of Inspections	Facilities w/One or More Violations		Facilities w/One or More Enforcement Actions		Total Enforcement Actions	Enforcement to Inspection Rate
Metal Mining	873	114	194	82	72%	16	14%	24	0.13
Non-metallic Mineral Mining	1,143	253	425	75	30%	28	11%	54	0.13
Lumber and Wood	464	142	268	109	77%	18	13%	42	0.15
Furniture	293	160	113	66	41%	3	2%	5	0.04
Rubber and Plastic	1,665	271	435	289	107%	19	7%	59	0.14
Stone, Clay, and Glass	468	146	330	116	79%	20	14%	66	0.20
Nonferrous Metals	844	202	402	282	140%	22	11%	72	0.18
Fabricated Metal	2,346	477	746	525	110%	46	10%	114	0.15
Electronics/Computers	405	60	87	80	133%	8	13%	21	0.24
Motor Vehicle Assembly	598	169	284	162	96%	14	8%	28	0.10
Pulp and Paper	306	189	576	162	86%	28	15%	88	0.15
Printing	4,106	397	676	251	63%	25	6%	72	0.11
Inorganic Chemicals	548	158	427	167	106%	19	12%	49	0.12
Organic Chemicals	412	195	545	197	101%	39	20%	118	0.22
Petroleum Refining	156	109	437	109	100%	39	36%	114	0.26
Iron and Steel	374	167	488	165	99%	20	12%	46	0.09
Dry Cleaning	933	80	111	21	26%	5	6%	11	0.10
*Percentages in Columns E and F are based on the number of facilities inspected (Column C). Percentages can exceed 100% because violations and actions can occur without a facility inspection.									

Exhibit 32
Five-Year Enforcement and Compliance Summary by
Statute for Selected Industries

Industry Sector	Number of Facilities Inspected	Total Inspections	Enforcement Actions	Clean Air Act		Clean Water Act		Resource Conservation and Recovery Act		FIFRA/TSCA/* EPCRA/Other	
				% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions
Metal Mining	339	1,519	155	35%	17%	57%	60%	6%	14%	1%	9%
Non-metallic Mineral Mining	631	3,422	192	65%	46%	31%	24%	3%	27%	<1%	4%
Lumber and Wood	301	1,891	232	31%	21%	8%	7%	59%	67%	2%	5%
Furniture	293	1,534	91	52%	27%	1%	1%	45%	64%	1%	8%
Rubber and Plastic	739	3,386	391	39%	15%	13%	7%	44%	68%	3%	10%
Stone, Clay and Glass	268	2,475	301	45%	39%	15%	5%	39%	51%	2%	5%
Nonferrous Metals	474	3,097	470	36%	22%	22%	13%	38%	54%	4%	10%
Fabricated Metal	1,340	5,509	840	25%	11%	15%	6%	56%	76%	4%	7%
Electronics/Computers	222	777	212	16%	2%	14%	3%	66%	90%	3%	5%
Motor Vehicle Assembly	390	2,216	240	35%	15%	9%	4%	54%	75%	2%	6%
Pulp and Paper	265	3,766	502	51%	48%	38%	30%	9%	18%	2%	3%
Printing	1,035	4,723	514	49%	31%	6%	3%	43%	62%	2%	4%
Inorganic Chemicals	302	3,034	402	29%	26%	29%	17%	39%	53%	3%	4%
Organic Chemicals	316	3,864	726	33%	30%	16%	21%	46%	44%	5%	5%
Petroleum Refining	145	3,237	797	44%	32%	19%	12%	35%	52%	2%	5%
Iron and Steel	275	3,555	499	32%	20%	30%	18%	37%	58%	2%	5%
Dry Cleaning	245	633	103	15%	1%	3%	4%	83%	93%	<1%	1%

*

Actions taken to enforce the Federal Insecticide, Fungicide, and Rodenticide Act; the Toxic Substances and Control Act, and the Emergency Planning and Community Right-to-Know Act as well as other Federal environmental laws.

Exhibit 33
One-Year Inspection and Enforcement
Summary for Selected Industries

Industry Sector	Number of Facilities Inspected	Total Inspections	Enforcement Actions	Clean Air Act		Clean Water Act		Resource Conservation and Recovery Act		FIFRA/TSCA/EPCRA/Other	
				% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions	% of Total Inspections	% of Total Actions
Metal Mining	114	194	24	47%	42%	43%	34%	10%	6%	<1%	19%
Non-metallic Mineral Mining	253	425	54	69%	58%	26%	16%	5%	16%	<1%	11%
Lumber and Wood	142	268	42	29%	20%	8%	13%	63%	61%	<1%	6%
Furniture	293	160	5	58%	67%	1%	10%	41%	10%	<1%	13%
Rubber and Plastic	271	435	59	39%	14%	14%	4%	46%	71%	1%	11%
Stone, Clay, and Glass	146	330	66	45%	52%	18%	8%	38%	37%	<1%	3%
Nonferrous Metals	202	402	72	33%	24%	21%	3%	44%	69%	1%	4%
Fabricated Metal	477	746	114	25%	14%	14%	8%	61%	77%	<1%	2%
Electronics/Computers	60	87	21	17%	2%	14%	7%	69%	87%	<1%	4%
Motor Vehicle Assembly	169	284	28	34%	16%	10%	9%	56%	69%	1%	6%
Pulp and Paper	189	576	88	56%	69%	35%	21%	10%	7%	<1%	3%
Printing	397	676	72	50%	27%	5%	3%	44%	66%	<1%	4%
Inorganic Chemicals	158	427	49	26%	38%	29%	21%	45%	36%	<1%	6%
Organic Chemicals	195	545	118	36%	34%	13%	16%	50%	49%	1%	1%
Petroleum Refining	109	439	114	50%	31%	19%	16%	30%	47%	1%	6%
Iron and Steel	167	488	46	29%	18%	35%	26%	36%	50%	<1%	6%
Dry Cleaning	80	111	11	21%	4%	1%	22%	78%	67%	<1%	7%

* Actions taken to enforce the Federal Insecticide, Fungicide, and Rodenticide Act; the Toxic Substances and Control Act, and the Emergency Planning and Community Right-to-Know Act as well as other Federal environmental laws.

VII.C. Review of Major Legal Actions

This section provides a listing of major legal cases and supplemental enforcement projects that pertain to the Metal Mining Industry. Information in this section is provided by EPA's *Enforcement Accomplishments Reports FY_1991, FY 1992, FY 1993* and the Office of Enforcement and Compliance Assurance. As indicated in the EPA's *Enforcement Accomplishments Report*, publications, nine significant enforcement actions were resolved between 1991 and 1993 for the metal mining industry. CERCLA violations comprised three of these actions, the most of any statute. The remaining cases were distributed fairly evenly with CWA and RCRA cited twice, and CAA, EPCRA, and TSCA each cited once.

Two of the cases involved cyanide contamination from heap leaching of gold ores. Each of the settlements, one under CERCLA and one under the CAA, resulted in monetary penalties. The CERCLA settlement provided for company reimbursement of the Superfund for \$250,000 in past response costs. Two other CERCLA settlements resulted in penalties: a penalty for failure to notify authorities of a release resulted in a \$75,000 fine; a judgment in U.S. vs. Smuggler-Durant Mining Corporation resulted in a \$3.4 million award in favor of the EPA.

Both of the CWA actions cited Section 404 for destruction of wetlands. Both instances involved placer mining and resulted in monetary penalties; one of the actions involved a Supplemental Environmental Project (SEP) requiring stream/wetland restoration. Another SEP involved a TSCA violation by Kennecott Utah Copper. In addition to a monetary penalty, Kennecott agreed to upgrade an emergency computer system at an estimated cost of \$70,000.

VII.C.1. Supplemental Environmental Projects

This section provides a list of Supplementary Environmental Projects (SEPs). SEPs are compliance agreements that reduce a facility's stipulated penalty in return for an environmental project that exceeds the value of the reduction. Often, these projects fund pollution prevention activities that can significantly reduce the future pollutant loadings of a facility.

In December, 1993, the Regions were asked by EPA's Office of Enforcement and Compliance Assurance to provide information on the number and type of SEPs entered into by the Regions. The following chart contains a representative sample of the Regional responses addressing the metal mining industry. The information contained in the chart is not comprehensive and provides only a sample of the types of SEPs developed for the metal mining industry. (See Exhibit 34)

Exhibit 34
Supplemental Environmental Projects

Case Name	EPA Region	Statute/ Type of Action	Type of SEP	Estimated Cost to Company	Expected Environmental Benefits	Final Assessed Penalty	Final Penalty After Mitigation
Sunshine Precious Metals, Inc. Kellogg, ID	X	TSCA	Pollution Reduction	\$6,588	Early disposal of PCB equipment.	\$6,588	\$3,294

VII.D. EPA Hardrock Mining Framework

EPA is currently developing a multi-media, multi-statute hardrock mining strategy for existing EPA authorities, resources, and expertise in order to address the environmental problems posed by mining activities in the U.S., in concert with other Federal, State, tribal and local agencies. Some of the driving issues behind the strategy's development are concerns about overlapping and poorly coordinated regulatory authorities and actions; liability under CERCLA and other statutes, which may create a recurring barrier to voluntary remediation of mine sites; and rapid changes in mining practices that are leading to new environmental challenges.

The strategy establishes **environmental goals**, to protect human health and ecological resources through pollution prevention, control, and remediation at active, inactive, and/or abandoned mine sites on both Federal and non-Federal lands; **administrative goals**, to use available resources and authorities most efficiently and to focus on the highest priority concerns; and **fiscal responsibility goals**, to promote inter- and intra-governmental efficiency and fiscal responsibility in control of mining sites, as well as to prevent future unfunded public burdens.

Several objectives have been defined in support of these goals, including the following:

- Facilitate coordination with co-regulators: employ a range of approaches to ensure coordination and communication
- Use innovative approaches to foster efficiency: wherever possible, innovative tools (particularly non-regulatory) will be employed to help achieve efficient and timely action
- Consolidate priority-setting: establish multi-agency priorities to maximize scarce resources, help ensure benefits for costs incurred, and address the most problematic sites first
- Promote fiscal/personal responsibility: promote responsibility to help owners reflect true costs of activities and to avoid incurring unnecessary and unfunded environmental and financial burdens for the public
- Enhance capabilities of existing tools: use current administrative authorities to improve environmental problem-solving capabilities
- Be proactive and preventative: ensure that environmental performance standards are quantified to the maximum extent, and that assumptions, risks, and uncertainties are identified
- Promote protective closure standards and adequate financial assurances: establish closure performance standards and bonding requirements that will ensure mines are properly closed and that adequate post-closure care is performed
- Perform timely and environmentally sound clean-up of abandoned mines: ensure that priority inactive and abandoned mines are cleaned up in a timely manner, addressing worst sites first, while avoiding costly efforts addressing mines with little or no environmental effects.

In compliance and enforcement issues, the strategy promotes multi-agency compliance approaches, developing a ranking system for determining inspection priorities, and developing a multi-media inspection protocol for mine sites. Other compliance and enforcement measures include:

- Promoting use of environmental audits within the

regulated community

- Conducting an enforcement initiative to target mine owners and operators who violate requirements to obtain and comply with storm water permits
- Compiling and circulating within EPA brief descriptions of successful mining-related enforcement actions brought by the Agency
- Prioritizing action based on the extent of actual human health and environmental impacts; the potential for additional impacts; the likely success, technical feasibility, and cost effectiveness of response actions; and the availability of staff, equipment, and funding
- Developing enforcement MOAs with other Federal agencies to facilitate consultations and joint actions
- Improving consultation between EPA and the States to determine whether violations of Federal and State law warrant joint enforcement action.

As noted above, however, EPA seeks to strengthen its use of non-regulatory tools to encourage environmental compliance and clean-up at mining sites. These tools are intended to complement existing regulatory programs in addressing mining impacts. Common themes of most non-regulatory approaches include: active participation by principal stakeholders, creative use of funding resources, site-specific flexibility, prioritization of clean-up projects, and regulatory discretion to promote creative problem-solving and early implementation of clean-up projects.

Most non-regulatory approaches have one or more of the following characteristics:

- **Financial** - Financial support often comes from a variety of sources when non-regulatory approaches are used; funds are often leveraged and budgets are typically tight. Other Federal agency funds are often used to supplement EPA funds; State/local partnerships can fill financial holes; and voluntary efforts by private parties can contribute significantly to clean-up of inactive or abandoned mine sites.

- **Institutional** - Interagency Agreements (MOUs, MOAs, and IAGs) are tools that can be used to streamline the mining permitting and regulatory processes; more informally, interagency groups are often used to focus attention on certain projects or issues. Agreements to encourage consistent Federal positions are particularly important for siting criteria, operating criteria, and reclamation and bonding standards.
- **Technical Assistance and Outreach** - Forms of technical assistance vary and may include dedicating either EPA staff or contractor hours to directly help a stakeholder; developing analytic methodologies, such as monitoring and testing standards; providing education and training; and providing materials to small business assistance centers.

EPA has identified several examples of existing approaches to using non-regulatory tools. Site-specific examples include the Coeur D'Alene Basin Restoration Project, the Clear Creek Watershed Project, and the Arizona Copper Mine Initiative. Non-site specific examples include the CWA non-point source funding approaches; RCRA Subtitle D Strawman guidelines; Mining Headwaters Initiative; technology demonstration programs; and the Western Governors' Association Mine Waste Task Force.

As part of its hardrock mining strategy, EPA is developing detailed guidance for regulatory personnel who must apply various regulatory tools to specific mine sites. This matrix will highlight areas of overlap, gaps, unused but available authorities, and synergy among the various regulatory authorities. Envisioned is a document that will present various sources of pollution, a range of possible associated problems/concerns/threats, and a short description of the tools applicable to each situation.

VIII. COMPLIANCE ASSURANCE ACTIVITIES AND INITIATIVES

This section highlights the activities undertaken by this industry sector and public agencies to voluntarily improve the sector's environmental performance. These activities include those independently initiated by industrial trade associations. In this section, the notebook also contains a listing and description of national and regional trade associations.

VIII.A. Sector-related Environmental Programs and Activities*Compliance Projects*

Region VIII has introduced "The Mining Initiative," whose goal is to obtain compliance with the Clean Water Act at active metal mines and metal mining exploration sites. The Regional NPDES program is in the process of determining the compliance status of the active metal mines located in the Region. Most of the mines (98 percent) are located in Colorado, Montana, and Utah. The States are trying to achieve deterrence through high profile enforcement actions which remove the economic advantage of noncompliance by assessing financial penalties.

The Region VIII Water Division is taking an active role in monitoring State enforcement actions against mining facilities and State-issued NPDES permits for mines, encouraging States to apply consistent requirements to all metal mining facilities. EPA has requested that each State appoint a contact to work with EPA on this initiative.

The Bureau of Mines Waste Research Program

In 1988 the debate over the Bevill exclusion wastes and other environmental issues led the Bureau of Mines to initiate a new, comprehensive research program to investigate the environmental problems posed by the mining and minerals processing industry in managing waste. The new research program was named the "Environmental Technology Program" and was established to develop mining technologies that would ameliorate environmental damage caused by mining activities.

The program's main elements are "Control of Mine Drainage and Liquid Wastes" and "Solid Waste Management and

Subsidence." Control of Mine Drainage and Liquid Wastes examines acid mine drainage and migration of toxic waters from mines and waste disposal piles that threaten the quality of surface and groundwater. The Solid Waste Management and Subsidence program has two objectives: to investigate management and disposal methods for the solid waste produced by mining and minerals processing; and to develop new technology to mitigate the effects of subsidence and other environmental hazards caused by underground mining. Under ETP, National Mine Land Reclamation Centers have also been established in several regions to investigate the surface effects of mining and the problems associated with reclaiming abandoned, as well as active, mine lands. An important element of the program is cooperation with universities, industry, labor, State and Federal government agencies, and international institutions.

The Bureau of Mines has also established an Environmental Health Research Program to focus on monitoring and controlling airborne dusts and emissions from diesel engines that are inhaled deep into the lungs, and which can cause respiratory diseases. Under this program, a dust monitor is being developed that will continuously evaluate dust conditions during the mineral ore extraction process and will alert workers to hazardous dust concentrations. Dust control techniques are primarily directed at reducing concentrations through use of water sprays, more effective use of ventilation, and modification of mining machine operations. Current Federal regulatory efforts for mining operations seek to limit the amount of diesel soot in the mine environment, while researchers are developing instruments that will allow diesel soot particulate to be sampled and measured in the underground atmosphere. The Bureau of Mines is also conducting research to reduce diesel soot emissions by filtration, ventilation, fuel modifications, and catalytic conversion techniques. Because of the confined, dusty, humid, and often hot conditions in the mine environment, this research will be widely applicable to the most difficult industrial and environmental dust problems.

Mine Safety and Health Administration (MSHA) Mines Initiative

Electrical transformers or capacitors containing polychlorinated biphenyls (PCBs) are often used as power sources in underground mines. This equipment is regulated by EPA to prevent environmental release of PCBs, chemicals classified as

probable human carcinogens. Abandoned mines often fill with groundwater, which can cause PCB-containing equipment, if left in place, to corrode and leak chemicals into the water; EPA regulations currently require removal of this equipment prior to mine closure.

EPA and MSHA launched a joint effort in early 1993 to identify all underground mines using electrical transformers or capacitors that contain PCBs. During 1993, MSHA inspectors conducted PCB surveys to identify mines using PCB- or other liquid-filled equipment underground. Inspectors also identified any violations of EPA regulations governing PCB use, marking, storage, or disposal. A total of 85 underground mines that may use PCB-containing equipment were identified. EPA has since used the PCB surveys in its enforcement efforts, resulting in four mining companies being cited for PCB mismanagement and facing Federal penalties of up to \$317,575. EPA has settled one of these cases, while filing three additional complaints.

Mine Waste Technology Program (MWTP)

In 1991 Congress allocated \$3.5 million to establish a pilot program for treating mine wastes in Butte, Montana. Both bench-scale research and field demonstrations are conducted through the MWTP. Sponsored by EPA's Risk Reduction Engineering Laboratory and the Department of Energy (DOE), the program is implemented by DOE's Western Environmental Technology Office (WETO) contractor, MSE, and the University of Montana's Montana Tech. MWTP program goals include the following:

- Identify mine waste problems that are most severely affecting human health and the environment
- Evaluate engineering and economic factors for selected technologies
- Prioritize the most promising mine waste treatment technologies based on their engineering and economic value
- Demonstrate, test, and evaluate the most promising mine waste treatment technologies
- Accelerate the commercialization of selected mine waste treatment technologies

- Transfer knowledge gained from the above through systematic training of user communities, and the use of workshops, short courses, video outreach, and graduate study support.

The program focuses on developing and proving technologies that offer solutions to the remedial problems facing abandoned mines and the ongoing compliance problems associated with active mines. Other Federal agencies, such as USBM, BLM, and the Forest Service, are also participating in various phases of the research. Within EPA, the Butte program is coordinated and teamed with the Superfund Innovative Technology Evaluation (SITE) program, and is coordinated with the DOIT (Demonstration of Innovative Technologies) Committee of the Western Governor's Association to assist in technology outreach and coordination among the States most affected by mining activities.

The priority areas for research are:

1) *Source controls, including in situ treatments and predictive techniques.* Such at-source control technologies as sulfate-reducing bacteria, biocyanide oxidation, transport control/pathway interruption techniques, and AMD production prediction techniques will help generate permanent solutions to mining waste problems.

2) *Treatment technologies.* Technologies such as unique reagent utilization and use of natural and enhanced wetlands are high priorities for research to protect the environment from immediate damage until long-range solutions can be developed.

3) *Resource recovery.* Much of the mining wastes represent a potential resource, since they contain significant quantities of heavy metals. Membrane technologies, ion exchange systems, electrochemical separation processes, selective precipitation, enhanced magnetic separation, biological treatment/recovery schemes, and advanced metallurgical processes are techniques that might provide effective and efficient separation and recovery of the metal values in both liquid and solid waste streams.

In addition to those cited previously in the profile, specific MWTP projects include the following:

- *Nitrate Removal Demonstration Project* focuses on developing innovative technologies to remove nitrates from effluent and drinking water through ion exchange, biological denitrification, and electrochemical ion exchange.
- *Neutral Chelating Polymers Research Project* focuses on treating acid mine wastewater by using chelates (chemical substances with more than one binding site on the molecule) to remove metal ions from wastewater.
- *Photoassisted Electron Transfer Reactions Research Project* focuses on treating mine wastewaters by using dissolved and solid photocatalysts to remove toxic cyanide and nitrate anions.
- *Science and Technology Information Retrieval System (STIRS)* facilitates centralized access to various databases developed by EPA, DOE, Bureau of Mines, and others, including CD ROM databases.
- *Remote Mine Site Demonstration Project* seeks to operate a water-powered remote treatment facility for acidic metal-laden mine wastewater, using the Crystal Mine near Basin, Montana. The facility treats 10-25 gallons of wastewater per minute, using a series of rip-rap channels, water wheel-powered feeders, and settling ponds to conduct oxidation, adjust pH levels, and separate solids and liquids for ultimate disposal.
- *Biocyanide Demonstration Project* focuses on using bacteria to degrade cyanide and cyanide complexes in mining wastewater.

Western Governors' Association

Over the past few years, EPA has enlisted the assistance of the States in developing an approach to regulating mining activities under RCRA. In order to facilitate the States' involvement in this effort, EPA has provided funding to the Western Governors' Association (WGA), an independent non-partisan organization of 21 member governors. In 1988, WGA formed a Mine Waste Task Force to coordinate the views of member States and to work with the EPA, the mining industry, the environmental community, and the public to develop workable mine waste

management programs.

Kansas State University

Kansas State University's Hazardous Substance Research Center (HSRC) is an EPA-funded center that provides research and technology transfer services for pollution prevention and other waste management techniques, including mining waste. HSRC programs include outreach for industry, assistance to government, education materials, and workshops on pollution prevention and hazardous waste remediation.

VIII.B. EPA Voluntary Programs

EPA sponsors a variety of programs aimed at waste reduction and pollution prevention. Some research-oriented programs, such as the Mining Waste Technology Program, are funded through other Federal and State agencies and are described in previous sections of this profile. Other programs that may serve the metal mining industry are highlighted below.

Environmental Leadership Program

The Environmental Leadership Program (ELP) is a national initiative piloted by EPA and State agencies in which facilities have volunteered to demonstrate innovative approaches to environmental management and compliance. EPA has selected 12 pilot projects at industrial facilities and Federal installations to demonstrate the ELP program principles. These principles include: environmental management systems, multi-media compliance assurance, third-party verification of compliance, public measures of accountability, community involvement, and mentoring programs. In exchange for participating, pilot participants receive public recognition and are given a period of time to correct any violations discovered during these experimental projects. (Contact: Tai-ming Chang, ELP Director, 202-564-5081 or Robert Fentress, 202-564-7023)

Project XL

Project XL was initiated in March 1995 as a part of President Clinton's *Reinventing Environmental Regulation* initiative. The projects seek to achieve cost effective environmental benefits by allowing participants to replace or modify existing regulatory requirements on the condition that they produce greater environmental benefits. EPA and program participants will negotiate and sign a Final Project Agreement, detailing specific objectives that the regulated entity shall satisfy. In exchange, EPA will allow the participant a certain degree of regulatory flexibility and may seek change in underlying regulations or statutes. Participants are encouraged to seek stakeholder support from local governments, businesses, and environmental groups. EPA hopes to implement fifty pilot projects in four categories including facilities, sectors, communities, and government agencies regulated by EPA. Applications will be accepted on a rolling basis and projects will move to implementation within six months of their selection. For

additional information regarding XL Projects, including application procedures and criteria, see the May 23, 1995 Federal Register Notice, or contact Jon Kessler at EPA's Office of Policy Analysis (202) 260-4034.

NICE³

DOE and EPA's Office of Pollution Prevention are jointly administering a grant program called the "National Industrial Competitiveness through Energy, Environment, and Economics" (NICE³). By providing grants of up to 50 percent of total project cost, the program encourages industry to reduce industrial waste at its source and to become more energy-efficient and cost-competitive through waste minimization efforts. Grants are used by industry to design, test, demonstrate, and assess the feasibility of new processes and/or equipment with the potential to reduce pollution and increase energy efficiency. The program is open to all industries, however priority is given to proposals from participants in the pulp and paper, chemicals, primary metals, and petroleum and coal products sectors. (Contact: DOE's Golden Field Office, 303-275-4729)

VIII.C. Trade Association Activity

The metal mining industry's many associations have been active participants in exploring new avenues of pollution prevention. As noted above, some are participating in Bureau of Mines or MSHA research. A description of various industry associations is provided in the following section.

The trade and professional organizations serving the metal mining industries are primarily organized according to commodity. In light of the controversy over mining law and the possible legislative reform of current mining practices, there are also several associations whose sole intent is to influence the reform process.

National Mining Association 1130 17th St. Washington, D.C. 20036 Phone: (202) 861-2800 Fax: (202) 861-7535	Members: 400 Contact: Richard Lawson
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Founded in 1995 with the merger between the American Mining Congress and the National Coal Association, the National Mining Association represents producers of domestic coal, metals, and industrial and agricultural minerals; manufacturers of mining and mineral processing machinery, equipment, and supplies; engineering/consulting firms; and financial institutions that serve the mining industry. The Association also offers tax, communications, and technical workshops.

Coalition for Responsible Mining Law c/o Coeur D'Alene Mines Corp. PO Box 1 Coeur D'Alene, ID 83816-0316 Phone: (208) 667-3511 Fax: (208) 667-2213	Members: 300 Staff: Budget: Contact: Justin Rice
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The Coalition for Responsible Mining Law (CRML) comprises mining company executives, exploration geologists, small miners, and others interested in mining laws, organized as a means of coalescing Western mining interests behind a proposal to preserve the basic provisions of the National Mining Law (Mining Law of 1872). The coalition seeks to raise awareness about the law within the mineral industry, Congress, and the general public through specialized education. Publications include a periodic newsletter.

Interstate Mining Compact Commission 459B Carlisle Dr. Herndon, VA 22070 Phone: (703) 709-8654 Fax: (703) 709-8655	Members: 17 Staff: 2 Budget: \$150,000 Contact: Gregory E. Conrad
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The Interstate Mining Compact Commission (IMCC) is comprised of States engaged in surface mining operations. The commission's purpose is to bring together State officials to discuss mining problems of national scope and significance. An effort is made to promote cooperation between States, private mining groups, and the Federal government, and to discuss, encourage, endorse, or sponsor activities, programs, and legislation to advance mined land reclamation. The IMCC publishes the *NASL Newsletter* quarterly.

Gold

Gold Institute 1112 16th St. NW, Ste. 240 Washington, DC 20036 Phone: (202) 835-0185 Fax: (202) 835-0155	Members: 66 Staff: 10 Budget: Contact: John Lutley
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The institute represents gold mining and refining companies, manufacturers of products containing gold, and others who hold and supply gold. The institute advances the gold industry's interests by "developing information from worldwide sources on gold uses, research, technology, markets, and reference data," and encourages the development and use of gold and gold products. Publications include the bi-monthly *Gold News*.

Lead

Lead Industries Association 295 Madison Ave. New York, NY 10017 Phone: (212) 578-4750 Fax: (212) 684-7714	Members: 70 Staff: 4 Budget: Contact: Jerome Smith
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The Lead Industries Association consists of mining companies, smelters, refiners, and manufacturers of lead products. The association provides technical information to consumers, maintains a library, and gathers statistics. Its primary semi-annual publication is LEAD.

Iron and Steel

American Iron and Steel Institute 1101 17th St. NW, Suite 1300 Washington, DC 20036-4700 Phone: (202) 452-7100 Fax: (202) 463-6573	Members: 1200 Staff: 44 Budget: Contact: Andrew G. Sharkey III
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Members of the American Iron and Steel Institute operate steel mills, blast furnaces, finishing mills, and iron ore mines. The Institute conducts extensive research programs on manufacturing technology, basic materials, environmental quality control, energy, and fuels consumption. In addition to technical manuals and pamphlets, the Institute also publishes the *American Iron and Steel Institute-Annual Statistical Report*.

American Iron Ore Association 614 Superior Ave, W Cleveland, OH 44113-1383 Phone: (216) 241-8261 Fax: (216) 241-8262	Members: 12 Staff: Budget: \$260,000 Contact: George Ryan
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The American Iron Ore Association represents iron ore producing companies in the U.S. and Canada. The organization's goals are to compile and disseminate statistics concerning the iron ore industry, and to provide a forum for discussing industry problems. The Association publishes a variety of documents, among them annual and monthly reports that detail significant occurrences in the industry.

Aluminum

Aluminum Association 900 19th St. NW, Ste. 300 Washington, DC 20006 Phone: (202) 862-5100 Fax: (202) 862-5164	Members: 86 Staff: 27 Budget: \$4,300,000 Contact: David Parker
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The Aluminum Association consists of producers of aluminum and manufactures of semi-fabricated aluminum products. The association represents members' interests in legislative activity and conducts seminars and workshops. In addition, the Association maintains a library and publishes various documents, including a monthly *Aluminum Situation*.

Copper

American Copper Council 2 South End Ave., No. 4C New York, NY 10280 Phone: (212) 945-4990	Members: 175 Staff: 2 Budget: \$300,000 Contact: Mary Boland
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The American Copper Council consists of producers, fabricators, merchants, consumers, and traders of copper. The council provides a forum for exchanging news and opinions between copper industry executives and government officials. In addition, the council maintains a relationship with the metal trade press and contributes data and background information related to copper industry events. A newsletter is published quarterly.

Zinc

American Zinc Association 1112 16th St., NW, Suite 240 Washington, DC 20036 Phone: (202) 835-0164 Fax: (202) 835-0155	Contact: George Vary
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The AZA is an international association that represents primary and secondary producers of zinc metal, oxide, and dust from the U.S., Canada, Mexico, Australia, Finland, Norway, and Spain, who sell in the U.S. market -- the largest single-country zinc market in the world. The association's primary goal is to promote awareness of and to educate the public about zinc and its many uses; *Zinc Essentials* is the association's newsletter.

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The Use of Constructed Wetlands in the Treatment of Acid Mine Drainage, Perry, Allen, Cambridge University Press, 1991.

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Division of Environmental
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U.S. Bureau of Mines

Technology

EPA Document Availability

Per the March 1, 1995 Federal Register, the following technical documents concerning wastes from non-coal extraction and beneficiation, were issued by the U.S. EPA, and are available at the RCRA docket, EPA Headquarters, Washington, D.C., and all EPA Regional Libraries. Copies of most documents may be purchased from the National Technical Information Service at (800) 553-NTIS. Most documents are also available electronically on the Internet System, through the EPA Public Access Gopher Server.

The following technical resource documents (TRDs) have been peer reviewed by State representatives, Federal land management agencies, mining companies, and public interest groups:

TRD Vol.1: Lead-Zinc (NTIS PB94-170248)

TRD Vol.2: Gold (NTIS PB94-170305)

TRD Vol.3: Iron (NTIS PB94-195203)

TRD Vol.4: Copper (NTIS PB94-200979)

TRD Vol.5: Uranium (NTIS PB94-200987)

TRD Vol.6: Gold Placer (NTIS PB94-201811)

TRD Vol.7: Phosphate & Molybdenum (NTIS PB94-201001)

The documents listed below discuss current mining waste management and engineering practices, and have been peer reviewed by State representatives, Federal land

management agencies, mining companies, and public interest groups:

Innovative Methods of Managing Environmental Releases at Mine Sites (NTIS PB94-170255)

Design and Evaluation of Tailings Dams (NTIS PB94-201845)

Treatment of Cyanide Heap Leaches & Tailings (NTIS PB94-201837)

Acid Mine Drainage Prediction (NTIS PB94-201829)

WASTE: An Information Retrieval System for Mill Tailings References (not at NTIS; available electronically or at RCRA docket)

The following documents provide historical context for EPA's mine waste activities:

•**Report to Congress on Wastes from the Extraction and Beneficiation of Metallic Ores, Phosphate Rock, Asbestos, Overburden from Uranium Mining, and Oil Shale (NTIS PB88-162631)**

¹ EPA Regions include the following States: I (CT, MA, ME, RI, NH, VT); II (NJ, NY, PR, VI); III (DC, DE, MD, PA, VA, WV); IV (AL, FL, GA, KY, MS, NC, SC, TN); V (IL, IN, MI, MN, OH, WI); VI (AR, LA, NM, OK, TX); VII (IA, KS, MO, NE); VIII (CO, MT, ND, SD, UT, WY); IX (AZ, CA, HI, NV, Pacific Trust Territories); X (AK, ID, OR, WA).